



NSF Plans for Computational Science and Cyberinfrastructure

**President's Information Technology
Advisory Committee Meeting**

**Dr. Arden L. Bement, Jr.
Acting Director
National Science Foundation**

June 17, 2004

The background is a complex digital collage. It features a dark blue and green color palette. Overlaid on this are various elements: a large, dense network graph with yellow nodes and green lines in the upper left; a smaller, more structured network graph with purple and blue nodes in the lower right; and a faint, large-scale grid of binary code (0s and 1s) in the background. The word "PHOTONICS" is written in a large, green, semi-transparent font across the upper middle. The text "Computational science drives discovery and innovation." is centered in a white, bold, sans-serif font.

Computational science drives
discovery and innovation.

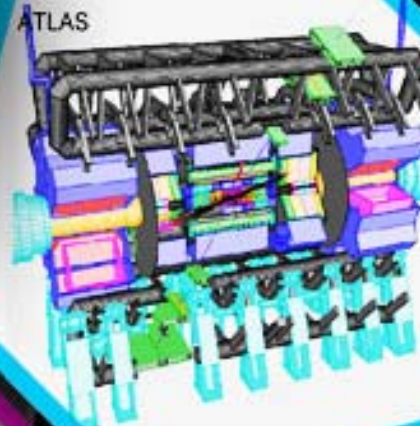
National Virtual Observatory

Montage of War and Peace Nebula

144 million pixels

Montage of

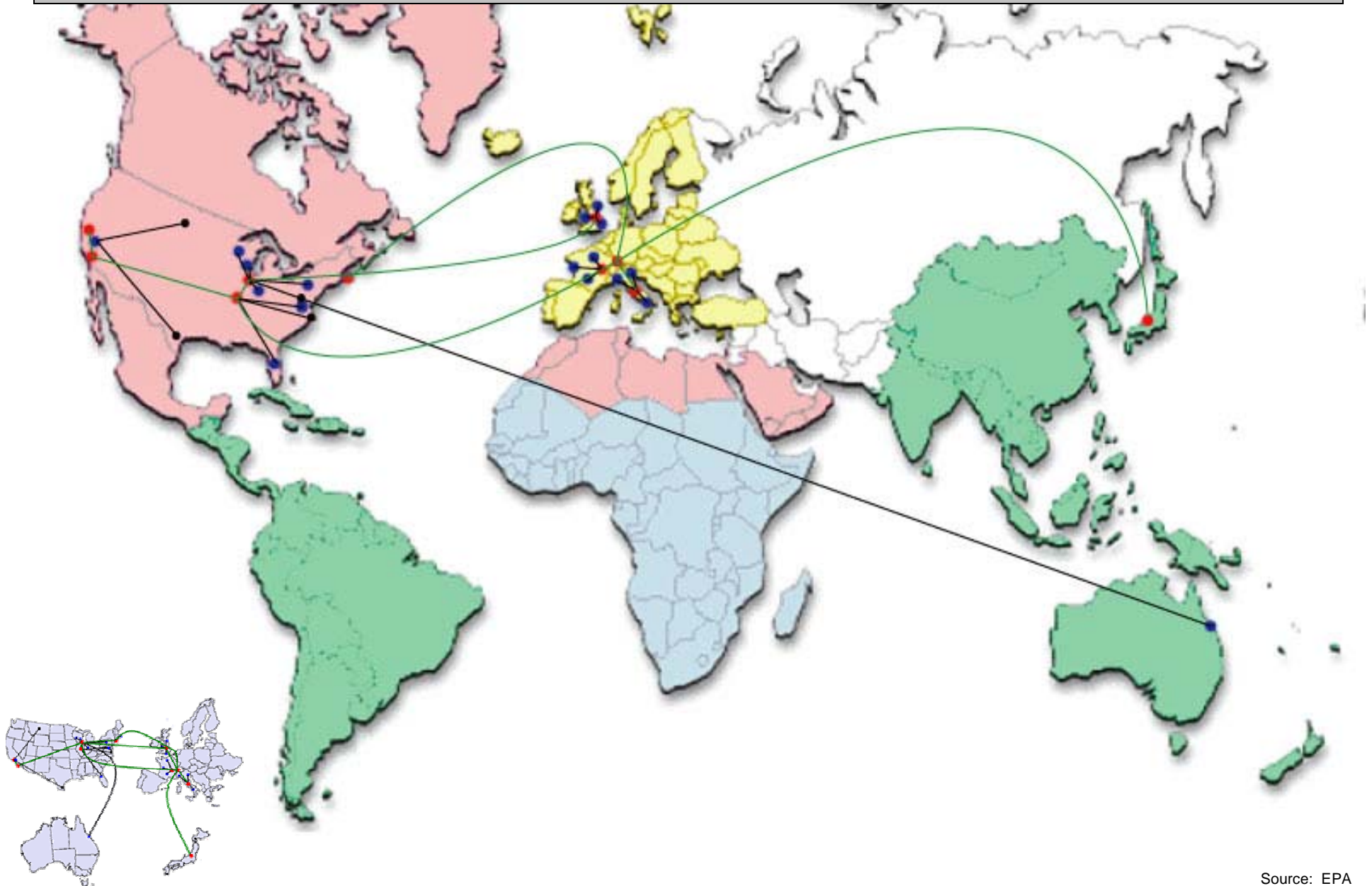
GriPhyN/iVDGL International Network



Large Hadron Collider



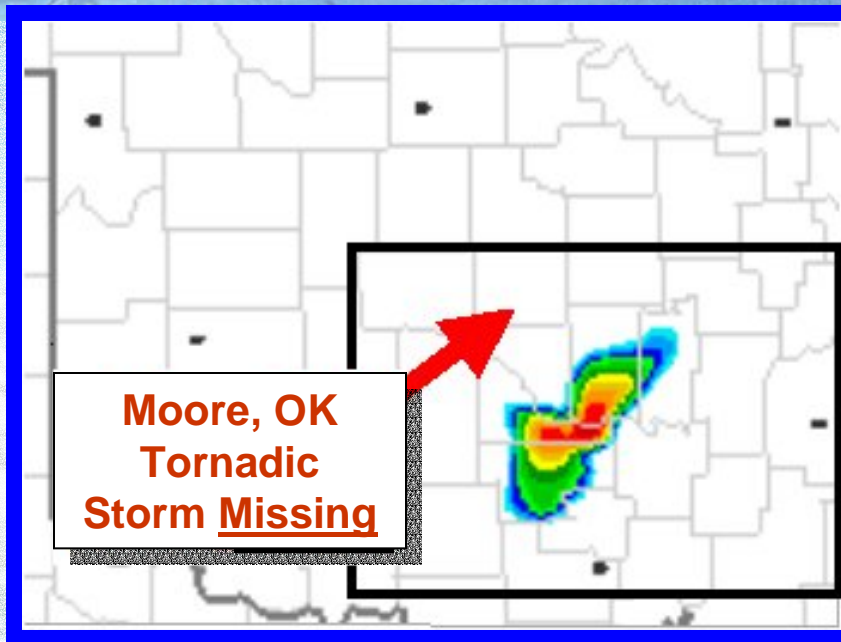
GriPhyN/iVDGL International Network



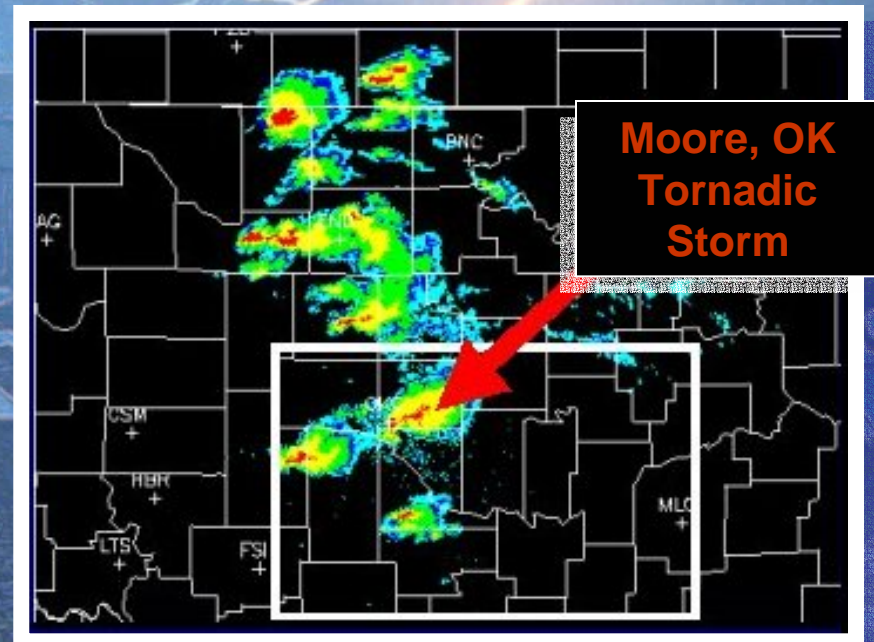


Center for Analysis and Prediction of Storms

Faster, More Accurate Storm Predictions

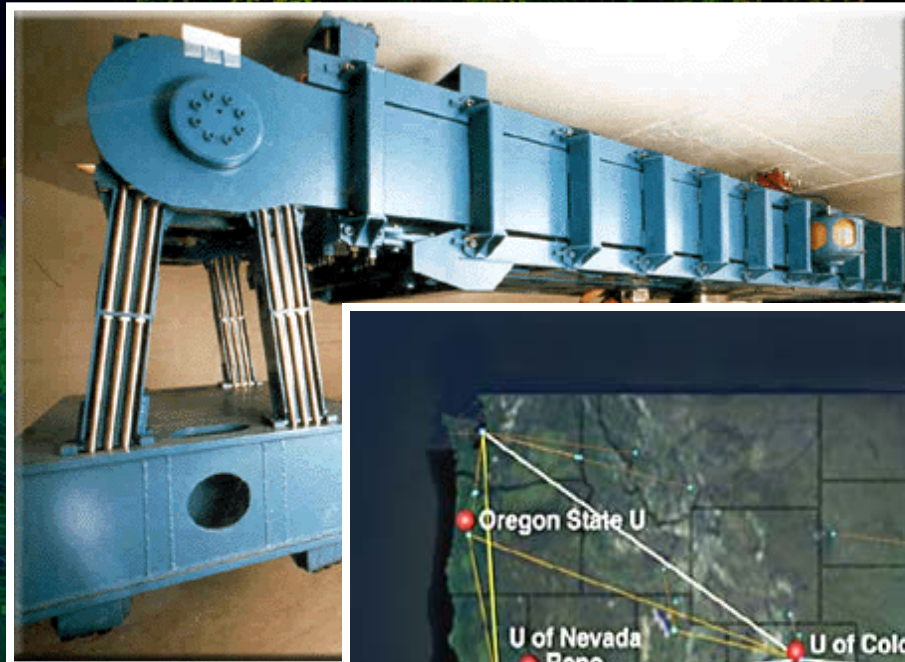


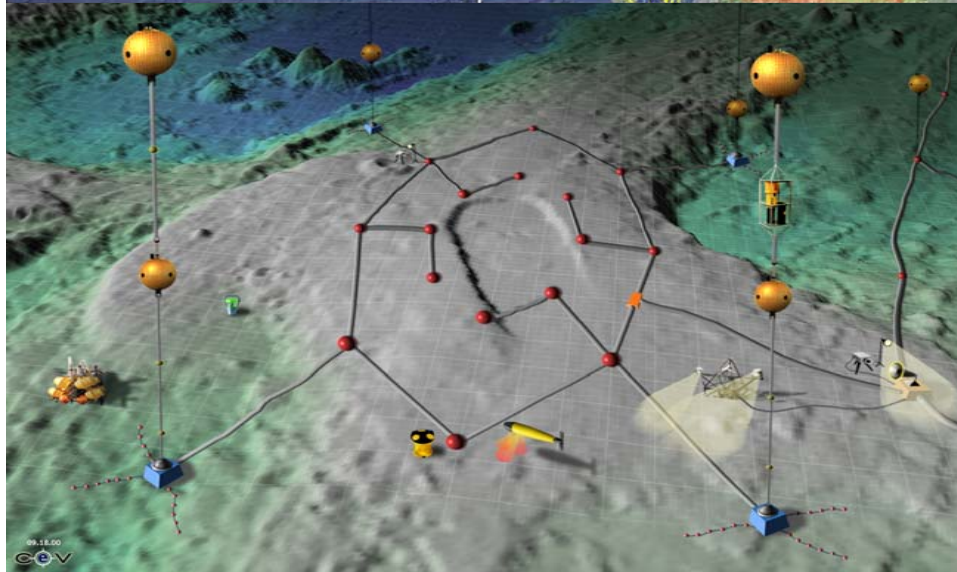
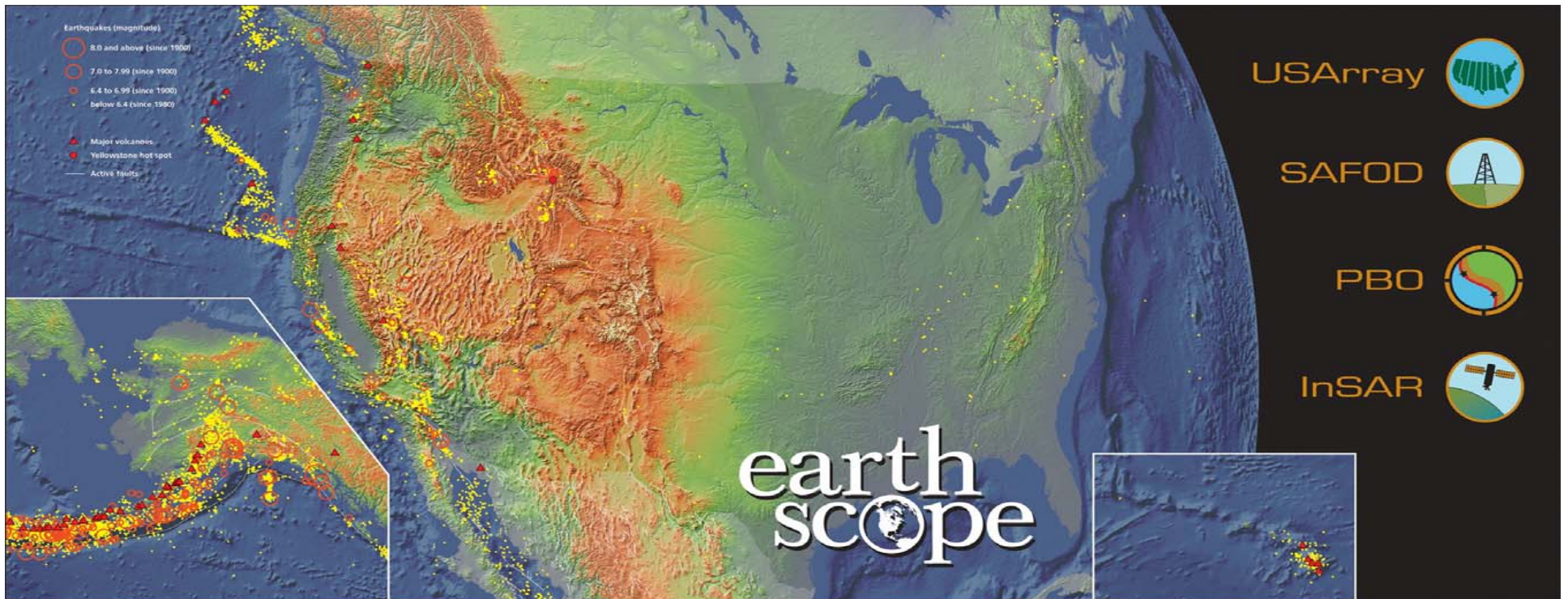
**Existing National Weather
Service Equipment**



**Prototype Terascale
Computer**

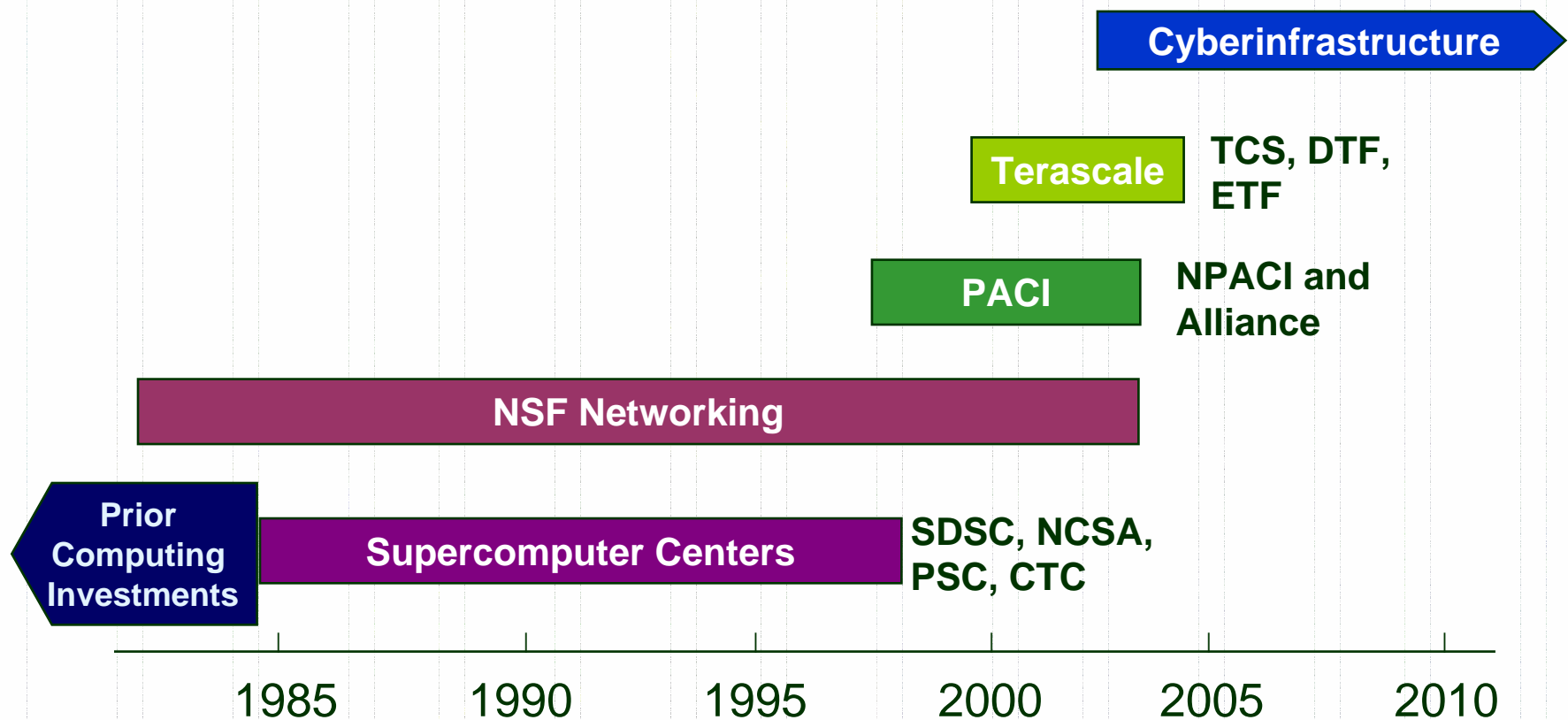
NEES



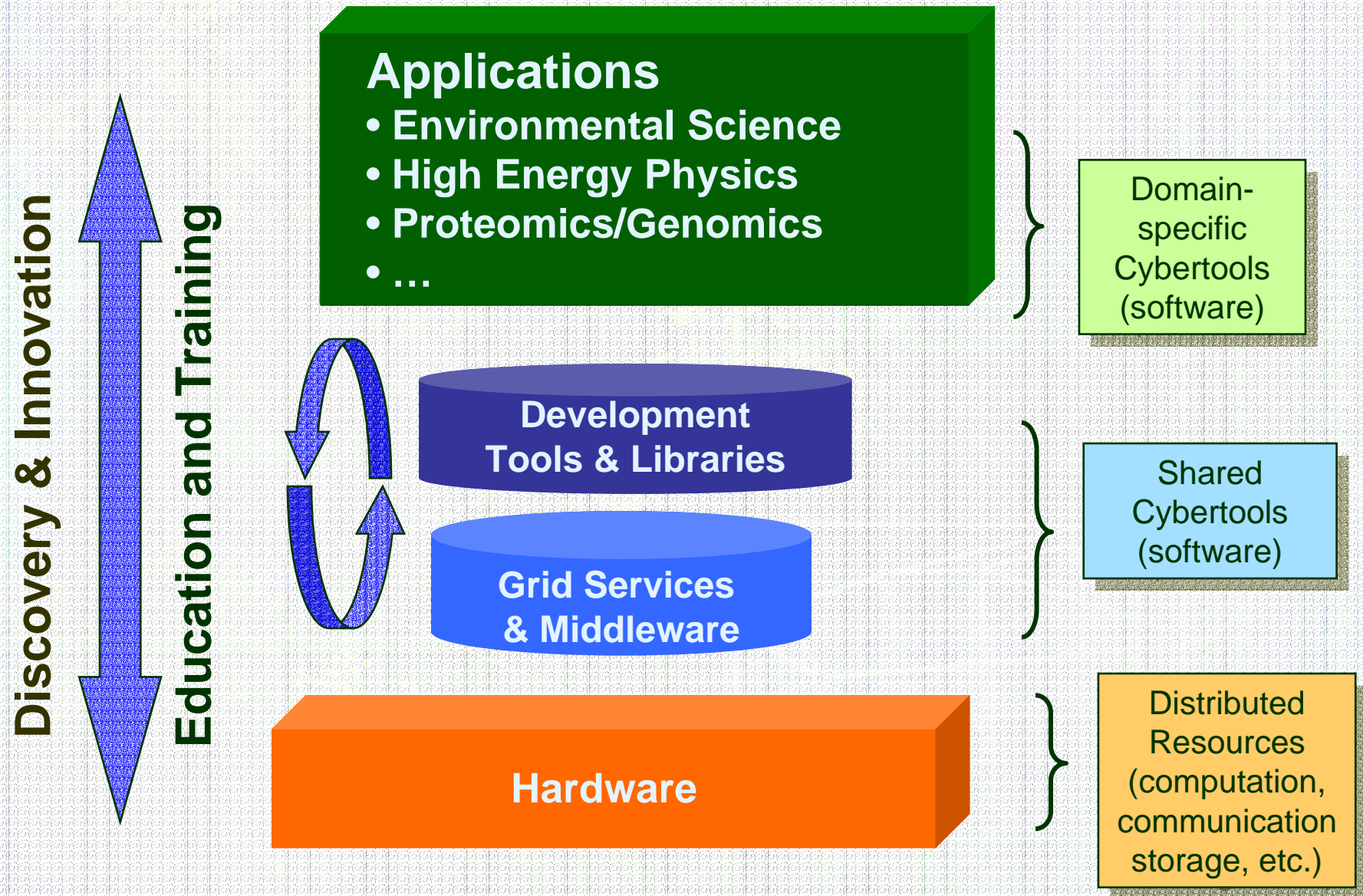


Source: Earthscope Magazine

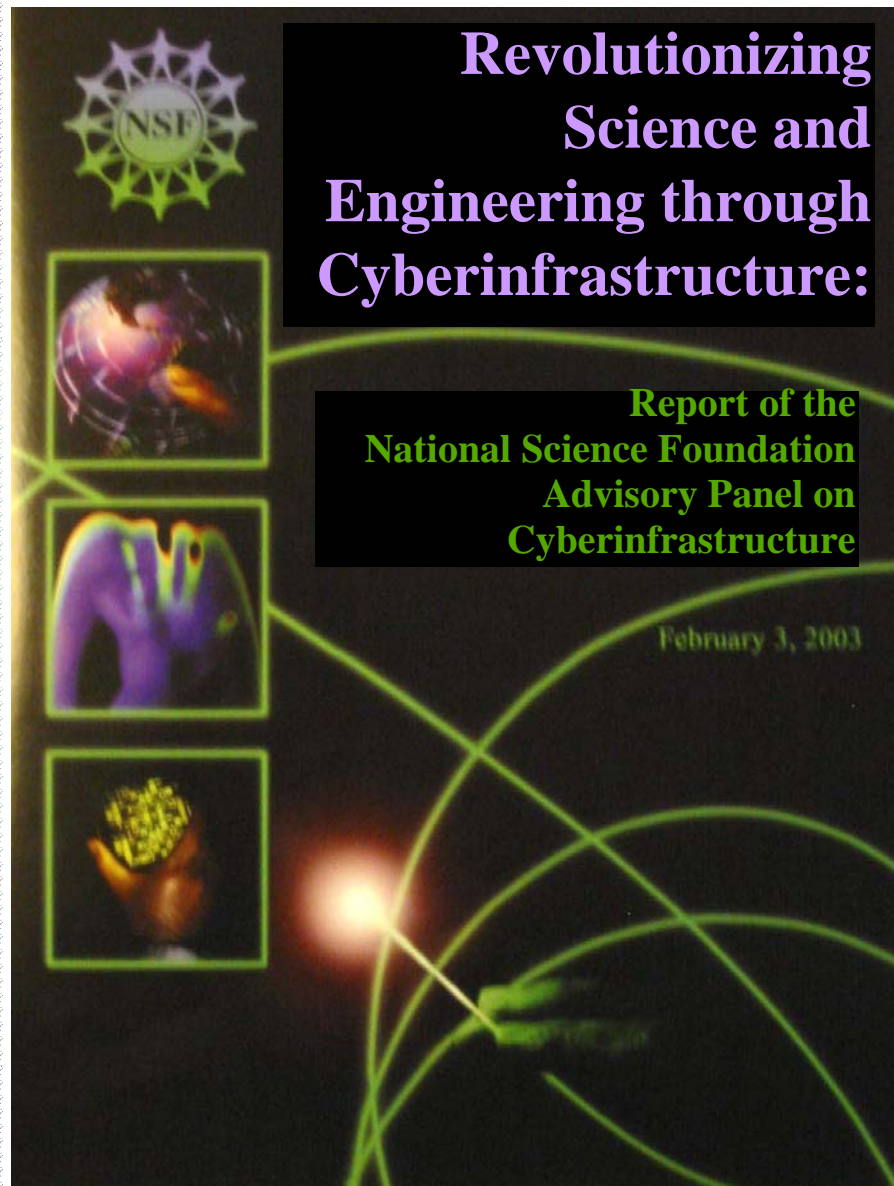
Evolution of Computational Infrastructure



Integrated Cyberinfrastructure System



The Atkins Report



Daniel E. Atkins, Chair,
University of Michigan

Kelvin K. Droegemeier,
University of Oklahoma

Stuart I. Feldman, IBM

Hector Garcia-Molina, Stanford
University

Michael L. Klein, University of
Pennsylvania

David G. Messerschmitt,
University of California at
Berkeley

Paul Messina, California Institute
of Technology

Jeremiah P. Ostriker, Princeton
University

Margaret H. Wright, New York
University

http://www.communitytechnology.org/nsf_ci_report/

National Science Foundation

Computational Science and Cyberinfrastructure: Activities & Plans

- **Support for 3 of top 15 supercomputers on the Top 500 List**
- **\$60 million dollar investment in supercomputer operations in 2005**
- **25 teraflops added to SDSC and NCSA in 2004**
- **Up to 50 teraflops upgrade at PSC in 2005-2006**

National Science Foundation

Computational Science and Cyberinfrastructure: Activities & Plans

- **\$10 million dollar solicitation for training educating, advancing and mentoring (TEAM)**
- **Leadership in cyberinfrastructure research investments**
- **HEC-URA solicitation on languages, compilers and libraries**
- **Develop domain-specific and generic computational science**

National Science Foundation

Computational Science and Cyberinfrastructure: Activities & Plans

- **Workshops on computational science, cyberinfrastructure, and education**
- **Cooperation with other agencies and international counterparts**
- **Propose committee to oversee NSTC working groups**

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Computational Science and Cyberinfrastructure: Vision for the Future

- ***Frontier research in Cutting-Edge Systems***
- ***Comprehensive, Integrated Cyberinfrastructure***